



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

H.R

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,795	11/04/2003	Nereo Pallaro	Q78233	3993
23373	7590	02/08/2007	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EGAN, SCOTT T	
			ART UNIT	PAPER NUMBER
			2622	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	02/08/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/699,795	PALLARO ET AL.	
	Examiner	Art Unit	
	Scott Egan	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 04 November 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1-26 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 05 April 2004 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/10/2004.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .

5) Notice of Informal Patent Application

6) Other: ____ .

DETAILED ACTION

1. This action is responsive to the original application filed on November 04, 2003.
2. Claims 1-26 are currently pending in this application. Claim 1 is independent.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 11/10/04 was. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: when referring to figure 7A the specification states "said package comprises a base 10 onto which the sensor chip 11 is mounted, and an optical protection window 12. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement

drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "20" has been used to designate both fiber end without lens and prism. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. The disclosure is objected to because of the following informalities: its states that "the prism taken into consideration is referred to with 20 in Figure 12A and 12B", Figure

Art Unit: 2609

11 should be added. The description also uses two different numbers for the prism 20, and 30, this problem should be corrected to conform to the correction needed in the drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claims 2, 4– 25** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Antecedent Basis/ Scope

10. Regarding claims **2, 4 – 25**, the phrases "for example", "for instance", and "if necessary" render the claims indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

11. **Claim 2** is rejected because it reads, "wherein it is installed in a motor vehicle, for instance on the front portion (i.e. in driving direction) of the inner rear view mirror", which is unclear as to whether or not the Applicant is claiming that the installation is limited to the front portion of the inner rear view mirror and unclear as to whether the front portion is in the driving direction or not. It also reads, "monitoring of the scene before the vehicle (for instance lane warning, adaptive headlight, vehicle meeting)" which is

Art Unit: 2609

unclear as to whether the Applicant is claiming that the scene before the vehicle is limited to lane warning, adaptive headlight, and/or vehicle meeting.

12. **Claim 4** is rejected because it reads, "designated for front monitoring function, for instance lane warning", which is unclear as to whether or not the Applicant is claiming that the front monitoring is limited to lane warning.

13. **Claim 11** is rejected because it reads, "for local fog detection (i.e. by means of an emitter, for instance in form of LED or laser diode)" which is unclear as to whether or not the Applicant is claiming that the active detection is limited by the use of an emitter and also unclear as to whether the Applicant is limiting the emitter to an LED or laser diode.

14. **Claim 13** is rejected because it reads, "also acting as support for one or more optical fibers and, if necessary, a prism" which is unclear as to whether or not the Applicant is claiming that the object being supported is limited by the inclusion of a prism.

15. **Claim 15** is rejected because it reads, "based on a partial covering of the surface of the matrix protection window...for instance by serigraphy or thermal evaporation" which is unclear as to whether or not the Applicant is claiming that the partial covering of the surface is limited to the techniques of serigraphy or thermal evaporation.

16. **Claim 16** is rejected because it reads "1) partial covering of prism faces with a layer of absorbing or reflecting material, 2) hole made into optical window and covering of hole inner walls", which is unclear as to whether or not it is alternative language.

Antecedent Basis

17. **Claim 15** recites the limitation "the area dedicated to front monitoring and those dedicated to rain, misting, fog, and dusk function" in lines 2-4. There is insufficient antecedent basis for this limitation in the claim.

18. **Claim 16** recites the limitation "the area dedicated to rain" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

19. **Claim 17** recites the limitation "the sub-area dedicated to rain function" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

20. **Claim 18** recites the limitation "the sub-area dedicated to windscreen misting function" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

21. **Claim 19** recites the limitation "the sub-area dedicated to dusk function" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

22. **Claim 20** recites the limitations "the sub-area dedicated to tunnel function" and "dedicated also to front monitoring function" in lines 1-2 and 3-4 respectively. There is insufficient antecedent basis for this limitation in the claim.

23. **Claim 21** recites the limitation "the sub-area dedicated to fog function" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

24. **Claim 22** recites the limitation "the sub-area dedicated to fog function" and "dedicated also to front monitoring" in lines 1-2 and 4 respectively. There is insufficient antecedent basis for this limitation in the claim.

25. **Claim 23** recites the limitation "the two sub-areas dedicated to vehicle meeting function" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

26. **Claim 24** recites the limitation "a sub-area dedicated to front monitoring" and "dedicated to front monitoring function" in lines 3 and 5-6 respectively. There is insufficient antecedent basis for this limitation in the claim.

27. **Claim 25** recites the limitation "the sub-area dedicated to front monitoring function" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Scope

28. **Claim 2** is rejected because it does not clearly point out the scope of the invention in that Applicant states, "wherein it is installed in a motor vehicle" but it is unclear as to what "it" is referring to.

29. **Claim 15** is rejected because it does not clearly point out the scope of the invention in that Applicant states, "wherein it is comprises means for optical insulation" but it is unclear as to what "it" is referring to.

30. **Claim 16** is rejected because it does not clearly point out the scope of the invention in that Applicant states, "wherein it is comprises means for optical insulation" but it is unclear as to what "it" is referring to. It is also unclear towards the end of the claim as to whether or not the insulation is based on both 1) and 2) or 1) or 2).

31. **Claims 5, 6 – 10, and 12** are rejected due to their dependence on claim 4.

32. **Claim 14** is rejected due to their dependence on claim 13.

Interpretation of Claims

Consider claim 2, for the purpose of examination the phrase "for instance on the front portion (i.e. in driving direction)" will not be considered as a limitation of the claim, and that portion of the claim will be interpreted as the front portion of the motor vehicle behind the rear view mirror. The phrase "for instance lane warning, adaptive headlight, vehicle meeting" will not be considered as a limitation of the claim. Claim 3 will be interpreted in accordance with claim 2.

Consider claim 4, for the purposes of examination the phrase "for instance lane warning" will not be considered as a limitation of the claim, and that portion of the claim will be interpreted as front monitoring function. This interpretation will be used for the examination of claims 5-10.

Consider claim 11, for the purposes of examination the phrase "(i.e. by means of emitter, for instance in form of LED or laser diode)" will not be considered as a limitation of the claim, and that claim will be interpreted to include two types of fog detection.

Consider claim 12, for the purposes of examination the phrases "two dedicated sub-areas or a sub-area dedicated to front monitoring" and "a color matrix or in a monochromatic matrix" will be considered in the alternative and therefore will be examined as a sub area dedicated to front monitoring and a color matrix respectively.

Consider claim 13, for the purposes of examination the phrase "optical fibers and, if necessary a prism" will be considered as an alternative and interpretation for each case will be done. Claim 14 will be considered with regard to the optical fiber

Art Unit: 2609

interpretation. Claim 17 and 18 will be considered with regard to the prism interpretation.

Consider claim 15, for the purposes of examination "it" will be considered the system of claim 13, the "the area dedicated to front monitoring and those dedicated to rain, misting, fog and dusk functions" will be considered as areas of the sensor.

Consider claim 16, for the purposes of examination "it" will be considered the system of claim 13, the "area dedicated to rain function" will be consider a area of the sensor, and the end of the claim, referring to 1) and 2), will be considered in the alternative.

Consider claim 17, for the purposes of examination "the sub-area dedicated to rain function" will be considered as a sub-area of the sensor.

Consider claim 18, for the purposes of examination "the sub-area dedicated to windscreen misting function" will be considered as a sub-area of the sensor.

Consider claim 19, for the purposes of examination "the sub-area dedicated to dusk function" will be considered as a sub-area of the sensor.

Consider claim 20, for the purposes of examination "the sub-area dedicated to tunnel function" will be considered as a sub-area of the sensor. The "dedicated also to front monitoring" will be considered as meaning the objective collects light for more than just tunnel function.

Consider claim 21, for the purposes of examination "the sub-area dedicated to fog detection, based on active technique" will be considered as a sub-area of the

sensor. All of the alternative language concerning the optical fiber will be interpreted as just an optical fiber.

Consider claim 22, for the purposes of examination “the sub-area dedicated to fog function, based on passive technique” will be considered as a sub-area of the sensor.

Consider claim 23, for the purposes of examination “the two sub-areas dedicated to vehicle meeting function” will be considered as two sub-areas of the sensor.

Consider claim 24, for the purposes of examination “a sub-area dedicated to front monitoring” will be considered as a sub-area of the sensor. And “the same objective dedicated to front monitoring function” will be interpreted as an objective.

Consider claim 25, for the purposes of examination “the sub-area dedicated to front monitoring function” will be considered as a sub-area of the sensor.

Claim Rejections - 35 USC § 102

33. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

34. **Claim 1-3 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Bechtel et al. (US 6,130,421).**

35. Consider **claim 1**, Bechtel et al. explicitly teach a “visual system (imaging system) comprising a CCD or CMOS matrix (pixel sensors 70 are CMOS active pixel

sensors, column 7 lines 48-49, figure 2) having a sensitive area divided into sub-areas (image sensor 34 is divided into several subwindows, column 6 line 59, figure 2), each being designed for a specific function of scene monitoring or detection of environmental parameters (column 6 lines 59-67), said division being achieved thanks to optical systems (imaging and non-imaging systems) with different directions and/or fields of view and/or modes of optical separation of said sub-areas (column 7 lines 53-67 and figure 3)."

36. Consider **claim 2**, Bechtel et al. explicitly teach the "system according to claim 1, wherein it is installed in a motor vehicle, for instance on the front portion (i.e. in driving direction) of the inner rearview mirror of the motor vehicle, so as to perform one or more functions among: rain detection, windscreens misting detection, fog detection, dusk detection, tunnel detection, vehicle meeting detection, monitoring of the scene before the vehicle (for instance lane warning, adaptive headlight, vehicle meeting) (headlamp control system 20 is used in a vehicle to control one or more headlamp 22...scene 24 is generally in front of the vehicle, column 5 lines 6-21, figure 1)."

37. Consider **claim 3**, Bechtel et al. explicitly teach the "system according to claim 1, wherein the matrix is a linear or logarithmic, monochromatic (or color) VGA CMOS matrix (pixel sensors 70 are CMOS active pixel sensors, column 7 lines 48-49)."

38. Consider **claim 26**, Bechtel et al. explicitly teach the "system according to claim 1, wherein some sub-areas are reserved for unused pixels necessary as additional separation between used sub-areas (figure 2 and column 7 lines 1-31 explain the gaps between used pixels)."

Claim Rejections - 35 USC § 103

39. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

40. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

41. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bechtel et al. (US 6,130,421)** in view of **Stam et al. (US 6,611,610)**.

Consider **claim 4**, Bechtel et al. explicitly teach the system of claim 1, wherein the matrix has its sensitive area divided into specific sub areas (image sensor 34 is divided into several subwindows, column 6 line 59, figure 2) designed for front monitoring function, dusk detection and tunnel detection (figure 4, and column 8 lines 38-67 through column 9 lines 1-42 describe the operation of the image system, which detects light from outside the vehicle to determine how the brightness and or necessity

for the vehicles headlights, which is synonymous with detecting light for tunnel detection, dusk detection and front monitoring).

However, Bechtel et al. do not explicitly teach that the image sensor performs fog detection.

In the same field of endeavor, Stam et al. teach a vehicle lamp control system which includes an image sensor and is located behind the rearview mirror to collect light from the environment in front of the vehicle. Stam et al. further teach that the image sensor can also be used to detect fog (column 38 lines 1-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the capability of fog detection found in Stam et al. into the visual system found in Bechtel et al. in order for a vehicle to reliably detect a foggy condition, and in response thereto, to automatically turn ON or OFF front and rear fog lamps (Stam et al. column 37 lines 1-3) which provides a system of safety for the vehicle operator.

42. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bechtel et al. (US 6,130,421)** in view of **Stam et al. (1) (US 6,611,610)** as applied to claim 4 above, and further in view of **Stam et al. (2) (US 5,923,027)**.

Consider **claim 5**, the combination of Bechtel et al. and Stam et al. (1), (combination A) teaches the system according to claim 4 including a matrix that has its sensitive areas divided into sub-areas.

However, combination A does not explicitly teach that the image sensor is capable of rain and misting detection.

In the same field of endeavor, Stam et al. (2) teaches a moisture sensor and windshield fog detector, which uses an image sensor. Stam et al. (2) further teach that in figures 1 and 2 that the imaging system has an image sensor 32 that collects light that has been emitted by LED 66, and the amount of light collected determines whether there is rain or fog on the inside of the windshield (see also column 4 lines 33-51).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the function of rain detecting and windshield fog detecting found in Stam et al. (2) into the system described above in combination A in order to have a system which automatically controls the windshield wipers during typical climate conditions, such as rain, snow, and fog (Stam et al. (2) column 2 lines 33-36).

43. Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (US 6,130,421) in view of Stam et al. (1) (US 6,611,610) in further view of Stam et al. (2) (US 5,923,027) as applied to claim 4 above, and further in view of Smith et al. (US 6,281,806).

Consider **claim 6**, the combination of Bechtel et al., Stam et al. (1), and Stam et al. (2) (combination B) teaches the system of claim 5 including a matrix that has its sensitive areas divided into sub-areas.

However, combination B does not explicitly teach that the image sensor has the capability of vehicle meeting detection.

In the same field of endeavor, Smith et al. teaches a driver road hazard warning and illumination system, which uses image sensors to detect the object in front of the vehicle. Smith et al. further teach that the sensor system provides comprehensive

information relative to the immediate surroundings of vehicle 12 (column 2 lines 51-53) and illuminates the obstruction.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the capability of informing the driver of the vehicles surroundings found in Smith et al. into the system found in combination B in order to provide the driver with a vision enhancement system which aids the driver in visually identifying a sensed object without diverting his/her attention from the road ahead...not only are any difficulties inherent in translating location information from a display screen to the real world eliminated, the total amount of time that the driver has to react to the sensed object is increased (column 2 lines 1-9).

Consider **claim 7**, combination B further teaches the "system according to claim 6, characterized in that it is provided for a sub-area dedicated to an active rain detection, by means of an emitter (column 10 lines 20-50 explain how the rain and fog detector from Stam et al. (2) operates with an LED 66)."

Consider **claim 8**, combination B further teaches the "system according to claim 7, wherein said area dedicated to rain function is also dedicated to wind- screen misting function, always by means of an emitter (Fig 1, automatic moisture sensing system 20 shows that the same part of a sensor is responsible for rain and inside fog detection, Stam et al. (2))."

Consider **claim 9**, combination B further teaches the "system according to claim 8, wherein dusk function is performed by a specific sub-area of CMOS matrix (figure 4, and column 8 lines 38-67 through column 9 lines 1-42 describe the operation of the

image system, which detects light from outside the vehicle onto a specific part of image sensor pixel array shown in figure 2 to determine how the brightness and or necessity for the vehicles headlights)."

Consider **claim 10**, combination B further teaches the "system according to claim 9, wherein tunnel function is performed by using part of the area dedicated to front monitoring function (figure 4, and column 8 lines 38-67 through column 9 lines 1-42 describe the operation of the image system, which detects light from outside the vehicle to determine how the brightness and or necessity for the vehicles headlights, which is synonymous with detecting light for tunnel detection, dusk detection an front monitoring and is done by the same section of the array)."

Consider **claim 11**, combination B further teaches the "system according to claim 10, wherein fog function is performed both with a dedicated sub-area, with an active technique for local fog detection (i.e. by means of an emitter, for instance in form of LED or laser diode) (column 10 lines 20-50 Stam et al. (2)), and with passive technique for fog bank detection in another sub-area corresponding to the one dedicated to front monitoring or contained therein (column 38 lines 1-9 Stam et al. (1))."

Consider **claim 12**, combination B further teaches the "system according to claim 11, wherein vehicle meeting function is performed by using a sub-area dedicated to front monitoring (imaging system from Bechtel et al. provides different sections of matrix area, one of which can be front monitoring as explained above), in a color matrix by means of optical filter with a discretization degree at pixel level (column 11 lines 9-21 in Bechtel et al.), though only in the area or sub-area of the matrix dedicated to front

monitoring (these lenses or filters described in Bechtel et al. are only for light going to specific portions of the sensor array as explained above)."

44. **Claim 13, 14, 19, and 20-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bechtel et al. (US 6,130,421)** in view of **Nakamura et al. (US 5,266,828)**.

Consider **claim 13**, Bechtel et al. explicitly teach the system according to claim 1 where the matrix sensor has a protective window (member 104), which acts as support for optical members (lenses 106 and 108).

However, Bechtel et al. do not explicitly teach the use of glass or a transparent window with support for optical fibers.

In the same field of endeavor, Nakamura et al. teaches an image sensor with an optical fiber array. Nakamura et al. further teach the use of a transparent substrate 26 and that optical information from the original 27 is introduced to the photo sensors 23 by the optical fiber array 25 embedded in the transparent substrate 26 (column 3 lines 25-26).

It would have been obvious to one of ordinary skill in the art to incorporate the transparent window which supports the optical fiber in order to provide the image sensors with focused light, helping to avoid cross talk among pixels that could have received unwanted light from other areas if not for the optical fibers (Nakamura et al. column 3 lines 25-31).

Consider **claim 14**, the combination of Bechtel et al. and Nakamura et al. further teaches that the optical fiber ends are fitted into holes made into the protection window

(see figure 2(a) in Nakamura et al. the fibers 25 are sent through the transparent substrate 26).

Consider **claim 19**, the combination of Bechtel et al. and Nakamura et al. further teaches that an area of the sensor receives light through optical fibers (column 3 lines 27-32 Nakamura et al.).

Consider **claim 20**, Bechtel et al. further teach that part of the image sensor 70 receives light through a lens 106 as seen in figure 3.

Consider **claim 21**, the combination of Bechtel et al. and Nakamura et al. further teaches that a sub-area on the sensor receives light through an optical fiber (column 3 lines 27-32 Nakamura et al.) together with a collection lens (red compliment lens 108 Bechtel et al.) which also acts as a high pass filter (lets blue light pass which has a small wavelength and thus a high frequency).

Consider **claim 22**, Bechtel et al. further teach that part of the image sensor 70 receives light through a lens 106 as seen in figure 3.

Consider **claim 23**, Bechtel et al. further teach that part of the image sensor 70 in particular, parts 72 and 74 receive light through lenses 106 and 108 respectively as seen in figure 3 and these lenses act as filters in that they only let certain light pass through (column 10 lines 63-67 through column 11 lines 1-8).

Consider **claim 24**, Bechtel et al. further teach that part of the image sensor 70 receives light through a lens 106 as seen in figure 3.

Consider **claim 25**, Bechtel et al. further teach that part of the image sensor 70 receives light through a lens 106, which is shifted above the center of the image sensor 70 as seen in figure 3.

45. **Claims 13, 17, 18** rejected under 35 U.S.C. 103(a) as being unpatentable over **Bechtel et al. (US 6,130,421)** in view of **Teder (US 5,661,303)**.

Consider **claim 13**, Consider Bechtel et al. explicitly teach the system according to claim 1 where the matrix sensor has a protective window (member 104), which acts as support for optical members (lenses 106 and 108).

However, Bechtel et al. do not explicitly teach the use of glass or a transparent window with support for a prism for carrying the signal to the sensor.

In the same field of endeavor, Teder teaches a moisture sensor with a prismatic coupler. Teder further teaches that the coupler 24 is on the inner surface of the windshield and as seen in figure 3 is a transparent window that covers the image sensor 58. The coupler uses detector prism 40 to direct the light onto the image sensor 58. Blocking grooves 38 and 40 insulate the prism in order to block out unwanted light (see also column 6 lines 29-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the coupler found in Teder into the imaging system found in Bechtel et al. in order to reduce the required optoelectronic components without increasing the size or reducing the effectiveness of the system (column 5 lines 48-50 Teder), in particular the directing of light to the image sensor, raise the optical efficiency and improve signal strength (column 5 lines 43-44 Teder),

and ensure that the light is perpendicularly projected onto the detector (column 4 lines 56-57 Teder).

Consider **claim 17**, the combination of Bechtel. Et al. and Teder further teaches the system of claim 13 wherein an area on the sensor receives a signal from an optical system including a series connection of a prism with optical insulation (the coupler uses detector prism 40 to direct the light onto the image sensor 58. Blocking grooves 38 and 40 insulate the prism in order to block out unwanted light, see also column 6 lines 29-64 Teder), a filter and an objective with optical axis perpendicular to the windscreens (lenses 106 and 108 filter light, column 8 lines 30-33, and are orthogonal to the entrance path of light as seen in figure 3 Bechtel et al.).

Consider **claim 18**, the combination of Bechtel. Et al. and Teder further teaches the system of claim 13 wherein an area on the sensor receives a signal from an optical system including a series connection of a prism with optical insulation (the coupler uses detector prism 40 to direct the light onto the image sensor 58. Blocking grooves 38 and 40 insulate the prism in order to block out unwanted light, see also column 6 lines 29-64 Teder), a filter and an objective with optical axis perpendicular to the windscreens (lenses 106 and 108 filter light, column 8 lines 30-33, and are orthogonal to the entrance path of light as seen in figure 3 Bechtel et al.)

46. **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bechtel et al. (US 6,130,421)** in view of **Nakamura et al. (US 5,266,828)** as applied to claim 13 above, and further in view of **Hodge et al. (US 1004/0057117)**.

Consider **claim 15**, the combination of Bechtel et al. and Nakamura et al. teaches the system of claim 13 and image sensor that is broken into different sub areas (image sensor 34 is divided into several subwindows, column 6 line 59, figure 2 Bechtel et al.) which perform functions such as headlight detection (see figure 2 Bechtel et al.). The combination further discloses a protection window that covers the sensor array.

However, the combination does not explicitly teach the use of insulation material based on a partial covering of the matrix protection window with an absorbing or reflecting material.

In the same field of endeavor, Hodge et al. teach a light sensing device 90 with light receiving elements 85 and a glass protection substrate 70. Hodge et al. further teach the use of black light shields 40 for permitting light to pass to their respective pixels (paragraph [0013] lines 21-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the black light shield layered on the window found in Hodge et al. into the system found in the combination above in order to provide for very little interference of stray light (paragraph [0014] line 3, paragraph [0008] also states that all transmission through the shield can be controlled and stress can be controlled, Hodge et al.).

47. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (US 6,130,421) in view of Nakamura et al. (US 5,266,828) as applied to claim 13 above, and further in view of Hodge et al. (US 1004/0057117).

Consider **claim 16**, the combination of Bechtel et al. and Nakamura et al. teaches the system of claim 13 and image sensor that is broken into different sub areas (image sensor 34 is divided into several subwindows, column 6 line 59, figure 2 Bechtel et al.). The combination further discloses a protection window that covers the sensor array and has a hole in it for optical fibers.

However, the combination does not explicitly teach the use of insulation material based on a partial covering of the matrix protection window with an absorbing or reflecting material.

In the same field of endeavor, Hodge et al. teach a light sensing device 90 with light receiving elements 85 and a glass protection substrate 70. Hodge et al. further teach the use of black light shields 40 for permitting light to pass to their respective pixels (paragraph [0013] lines 21-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the black light shield layered on the window found in Hodge et al. into the hole in the window found in the combination above in order to provide for very little interference of stray light (paragraph [0014] line 3, paragraph [0008] also states that all transmission through the shield can be controlled and stress can be controlled, Hodge et al.).

Conclusion

48. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hsiang (US 2002/0039065) disclose a fiber-optic image sensor

Art Unit: 2609

system in a car that can sense light all around the car and send the information through processing and onto a display that can be viewed by the vehicle operator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Egan whose telephone number is (571) 270-1452. The examiner can normally be reached on Monday-Friday 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 270-1455. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SE



PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER